

REMARKS/ARGUMENTS

Claims 1-31 are pending. Claims 3-5, 14-16, 20-22 and 29 have been withdrawn. By this amendment, Claims 2, 8, 9, 11-13, 16, 18, 23, 24 and 27 are amended. Claims 2, 8, 9, 11-13 and 24 are amended to positively recite the method steps. The remaining claims are amended to correct informalities. Applicants respectfully request reentry of the withdrawn claims, each of which, depends from an allowable independent claim as discussed below.

Applicants again respectfully request consideration of the Information Disclosure Statement filed March 7, 2005. A copy is attached for the convenience of the Examiner.

Paragraph 4 of the Office Action asserts that the step of “exciting” is a desired outcome. Furthermore, the Office Action indicates that no weight was given to the recited “predetermined.” These assertions are respectfully traversed.

As discussed in M.P.E.P. §2116.01,

All the limitations of a claim must be considered when weighing the differences between the claimed invention and the prior art in determining the obviousness of a process or method claim. (emphasis in original)

Thus, for the purposes of the rejection under 35 U.S.C. §103(a), addressed below, all the limitations of Claims 1, 3, 6-13, 17-19, 23-28, 30 and 31 must be taken into consideration.

Paragraph 4 of the Office Action further asserts that,

Unless the prior art discloses randomly searching for the proper perturbation wavelength the prior art would inherently take in consideration (1) weight of the plane (2) velocity (3) environmental conditions, etc. to determine the desired fluid characteristics.

This assertion is respectfully traversed. As discussed in M.P.E.P. §2112(IV) the Examiner must provide rationale or evidence tending to show inherency. The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that resultant characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). To establish inherency the extrinsic evidence must

make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency however may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51, (Fed. Cir. 1999).

In relying upon inherency the Examiner must provide a basis in fact and/or technical reasons to reasonably support the determination that the alleged inherent characteristic necessarily flows from the teachings of the applied prior art. *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original).

Paragraph 5 of the Office Action asserts that the location of generating the method step is not limited by the location of the device. This assertion is respectfully traversed as having no basis in any recognized exception. As discussed in the specification at for example page 8, line 21 *et seq.*, the periodic perturbation of the flow is generated on each of the wings in the vicinity of the area of creation of at least of the co-rotating eddies associated with the wings.

Paragraph 6 of the Office Action asserts that the invention does not create the diameter of the perturbation. Applicants assume that the diameter of the vortices is intended. This assertion is respectfully traversed.

As discussed in the specification at, for example, page 10, line 26, the periodic perturbations have a wavelength which can excite at least one of the instability modes of the corresponding eddy to increase a diameter of the core of the contrarotating vortices.

Paragraph 7 of the Office Action appears to be making a rejection under 35 U.S.C. §112, second paragraph. Claims 18, 23 and 27 are amended to obviate this rejection.

As discussed during the May 17th telephone discussion, paragraph 8 is withdrawn.

The Office Action rejects Claims 1, 2, 6-13, 17-19, 23-28, 30 and 31 under 35 U.S.C. §102(b) or in the alternative under 35 U.S.C. §103(a) over USP 3,936,013 to Yuan. This rejection is respectfully traversed.

Applicants respectfully assert that the patent office has not carried forward its burden of proof to establish that Yuan discloses the feature of generating a periodic perturbation having a predetermined wavelength that excites at least one internal instability mode of a core of the first eddy as in independent Claims 1, 7, and 10.

The Office Action recognizes that Yuan does not use Applicants' specific claim language. However, the Office Action asserts that absent any convincing evidence to the contrary the Examiner believes that vortex destruction devices that interact with eddy flows "excite the instability mode" of the eddies and "accelerate the destruction of the resulting vortex." However, this statement does not address the features of independent Claims 1, 7 and 10 of a periodic perturbation having a predetermined wavelength that excites at least one internal instability mode of a core of the first eddy.

With regard to the rejection under 35 U.S.C. §102(b), a claim is anticipated only if each and every element as set forth in the claims is found either expressly or inherently described, in a single prior art reference. The Office Action admits that Yuan does not expressly disclose features of Claims 1, 7 and 10. The Office Action attempts to use Bilanin et al. and Ortega as extrinsic evidence to show an inherent characteristic. To serve as anticipation when a reference is silent about an asserted inherent characteristic, a gap in a reference may be filled with recourse to extrinsic evidence. However, the evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference and that it would be so recognized by persons of ordinary skill. See M.P.E.P. §2131.01(III).

Bilanin et al. discloses first altering the generated initial vortex and second, introducing relatively weak secondary vortices using vortex leveraging tabs. See column 4, line 52 *et seq.* The tabs are positioned and aligned so that the vortices trailed from them are amalgamated in the formation of the in-board vortices. See Figure 8A. Thus, the structure and method of Bilanin et al. would not lead one to believe that the missing features of Yuan are necessarily inherent.

With respect to Ortega, this reference is not prior art since the effective filing date of the present application is February 25, 2002. Even considering its teachings, Ortega discloses at column 1, line 31, that active weak alleviation designs include such concepts as small, pulsatable jets located at the wing tips and spoilers or flaps that were periodically deployed in flight. "These designs were intended to excite the Crow instability and rapidly cause the linking of the oppositely signed tip vortices." Thus, Ortega provides evidence that Yuan does not necessarily include the features of independent Claims 1, 7 and 10. Bristol does not appear to be prior art either and cannot be relevant to an obviousness analysis.

As discussed in the specification the perturbation causes the core of the eddy to oscillate and make it unstable. As the merging of the two eddies progresses the highly perturbed eddy contaminates the other eddy and modifies the process of merging the two eddies. Consequently the diameter of the vortex resulting from the unstable merging of the eddies is greater and its level of internal turbulence is higher than in the absence of the instability.

CONCLUSION

The Office Action recognizes that Yuan does not disclose all the features of independent Claims 1, 7 and 10. All of the features of Claims 1, 7 and 10 must be taken into account during examination. Neither Bilanin et al. nor Ortega, nor any other evidence

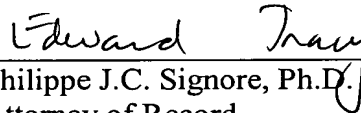
presented by the Office Action, show that the features of Claims 1, 7 and 10 missing from Yuan are inherent. Finally, Ortega is not prior art.

Consequently, in view of the present Amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. A Notice of Allowance is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,

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